FIGS. 1A and 1B are timeline diagrams illustrating the time relationship of data frames transmitted and received on the exemplary multi-channel data network similar to cdma2000;

FIG. 2 is a functional block diagram of an exemplary embodiment of a cdma2000 RLP3 transmission system;

FIG. 3 is a flowchart diagram of a method for implementing delayed frame detection in RLP3;

FIG. 4A-4D illustrate RLP frame reception and memory structure management used by the delayed frame detection method diagramed in FIG. 3;

FIG. 5 is a flowchart diagram of an alternative method for implementing delayed frame detection in RLP3;

FIG. 6A-6D illustrate RLP frame reception and memory structure management used by the delayed frame detection method diagramed in FIG. 5; and

FIG. 7 is a block diagram of apparatus for performing delayed frame detection in RLP3.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The disclosed embodiments are applicable to systems such as cdma2000, W-CDMA, and EDGE, wherein data is transferred using an ARQ (automatic request for retransmission) mechanism, and wherein data packets are sometimes received in an order different from the order in which they were transmitted.

In relation to the transmission and receipt of RLP frames, RLP3 currently communicates with a multiplex sublayer below it and a byte stream layer above it. The byte stream layer is commonly referred to as the Point to Point Protocol (PPP) layer, because PPP is commonly the protocol used in the byte stream layer. However, as the byte stream layer need not be PPP (the byte stream layer could be ISDN, or one of a plurality of protocols), it is herein referred to